

The History Of Computers

You will learn about the history of the microcomputer and of the Internet

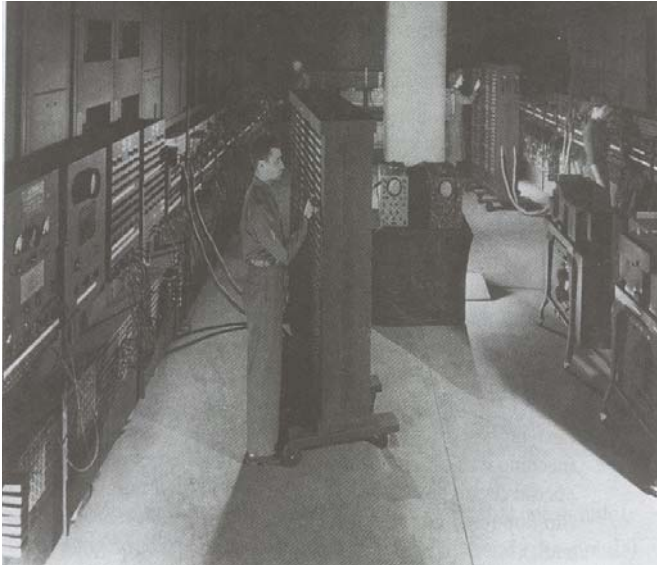
James Tam

History Of The Microcomputer

- The microprocessor
- The first home computer: Altair
- Microsoft and it's influence on Microcomputers
- The IBM-PC
- History of Apple computers
- The attack of the clones and the rise of Microsoft
- Intel Microprocessors
- The history of the Internet

James Tam

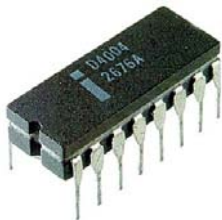
Computers: Before The Microprocessor



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The First Microprocessor

- Produced by Intel in the early 1970's
- It's development revolutionized computers by allowing computers to be more widely used.



The 4004 processor

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What Is Microcomputer?

- Sometimes it's referred to as a 'PC' (Personal Computer)

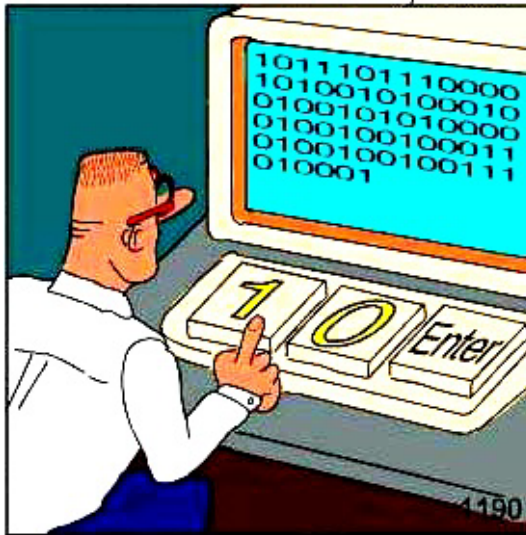


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The First Computer For Home Users: The Altair



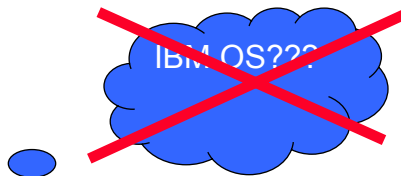
**Note: Most Computer Users At The Time Were
Extremely Technically-Oriented**



REAL Programmers code in BINARY.

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Microsoft's Influence On Microcomputers



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Microsoft's Influence On Microcomputers (2)

- IBM approached two companies as possible vendors of an operating system to run its computers:
 - Digital Research
 - Microsoft
- IBM and Microsoft worked out an arrangement to have a version of Microsoft's DOS (*Disk Operating System*) run IBM computers: PC-DOS

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Microsoft's Influence On Microcomputers (3)

- The interface of PC/MS-DOS has been criticized as being user-unfriendly.

```
C:\Documents and Settings\tamj>dir
Volume in drive C is System Disk
Volume Serial Number is 7839-55BE

Directory of C:\Documents and Settings\tamj

09/17/2007  06:34 PM    <DIR>      .
09/17/2007  06:34 PM    <DIR>      ..
11/14/2003  03:11 PM    <DIR>      .java
11/14/2003  03:11 PM    <DIR>      .javas
11/14/2003  03:11 PM    <DIR>      .jpl.cache
01/29/2004  02:07 PM    <DIR>      .plugin141_02.trace
01/29/2003  11:18 AM             710  z
01/29/2003  03:36 PM             3,236  z
08/07/2007  07:27 PM    2,592,068  AdobeWeb.log
08/07/2007  07:47 PM    12,216    cached-routers
08/07/2007  09:12 PM    12,216    cached-routers.new
08/24/2007  02:51 PM    <DIR>      cached-status
08/24/2007  02:51 PM    <DIR>      Contacts
08/24/2007  02:51 PM    <DIR>      Desktop
08/26/2007  07:39 PM    <DIR>      Favorites
08/26/2007  06:36 PM    <DIR>      8,422    gsview32.ini
08/26/2007  06:27 PM    <DIR>      junk
08/13/2007  06:27 PM    <DIR>      My Documents
08/13/2007  11:17 AM    <DIR>      My pictures and videos
08/13/2007  12:08 AM    <DIR>      N1
08/13/2007  12:08 AM    <DIR>      presets.ini
08/13/2007  12:08 AM    <DIR>      0
08/13/2007  12:08 AM    <DIR>      BCD
08/13/2007  12:08 AM    <DIR>      RECENT
08/13/2007  08:37 PM    <DIR>      Start Menu
08/13/2007  08:37 PM    <DIR>      stat
08/13/2007  08:37 PM    23,040    subile_technologies.doc
12/13/2003  07:03 AM    4,131    T
12/13/2003  07:03 AM    4,131    T
11/19/2003  01:13 PM    <DIR>      VSWebCache
08/23/2003  05:49 PM    <DIR>      WINDOWS
08/23/2003  05:49 PM    <DIR>      zip utilities
08/23/2003  05:49 PM    502,744  .
08/19/2003  04:51 AM    3,440    .
08/19/2003  04:51 AM    3,440    .
08/01/2003  04:11 PM    24,852    F
12/27/2003  06:24 PM    4,131    U1
12/06/2003  07:30 AM    4,131    s
19 File(s)  3,195,041 bytes
17 Dir(s)  56,508,698,624 bytes free

C:\Documents and Settings\tamj>
```

Command

Effect of the command

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Microsoft's Influence On Microcomputers (4)

- However the interface of PC/MS-DOS was a significant improvement over other operating systems.

CP/M operating system

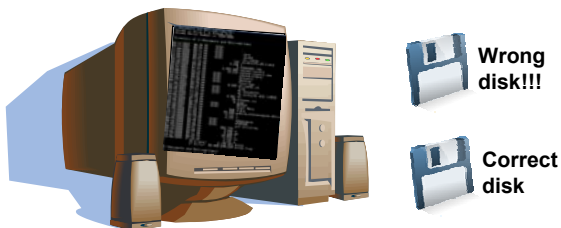


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Microsoft's Influence On Microcomputers (4)

- However the interface of PC/MS-DOS was a significant improvement over other operating systems.

PC/MS-DOS operating system



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Versions Of Microsoft Operating Systems

- PC/MS-DOS (many versions)
 - Windows 3.1
- Windows 95
- Windows 98
- Windows 2000
- Windows XP
- Windows Vista

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The IBM PC (Personal Computer: 1981)

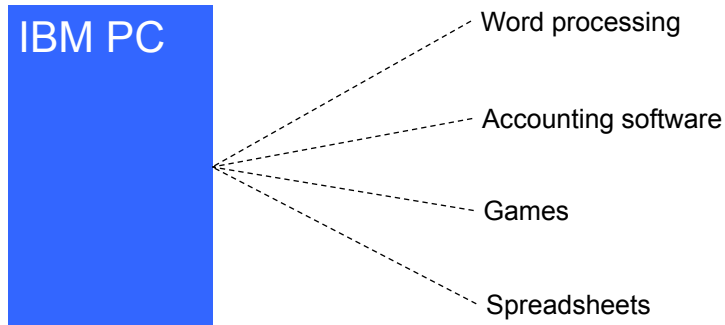


- IBM was a large company but a late comer into the personal computer market.
- As mentioned its machines used an operating system produced by Microsoft.

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The IBM PC (Personal Computer: 1981): 2

- With the entry of IBM in the microcomputer market, many developers produced a plethora of software.



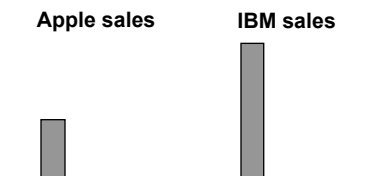
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The IBM PC (Personal Computer: 1981): 3

- Apple entered the microcomputer market sooner and already had an established market when IBM began to first market the PC.



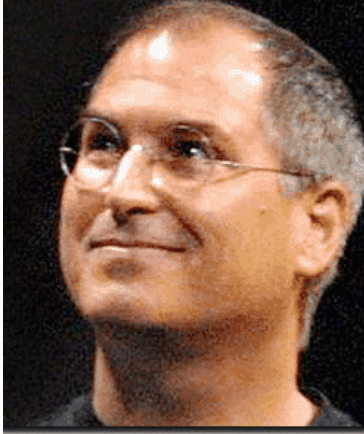
- Because of the prevalence of so much software the IBM-PC soon overtook the Apple in Sales



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The History Of Apple Computers: Steve And Steve

- Apple was founded by Steven Jobs and Steve Wozniac in Silicon Valley garage.



Steven Jobs



Steve Wozniac

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The Apple I Computer (1976)



© 1992 Smithsonian Institution

- Purportedly built under extreme conditions
- It was far from the standard of a modern computer

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The Apple II Computer (1977)



- It was simpler and more powerful design than the Altair
- The color graphics were superior to larger and more expensive computers
- Strong selling points
 - Name
 - Appearance

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The Apple II Computer (1977): 2



- The storage device was primitive by today's standards but sufficient to meet the needs of the time
- VisiCalc: *"It was the software tail that wagged the hardware dog"*

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The Apple Lisa (1984)



- The Lisa (1983) incorporated many of the features of the Xerox Star
- Like the star it was expensive (\$10K) and sales were weak

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The Apple Macintosh (1984)

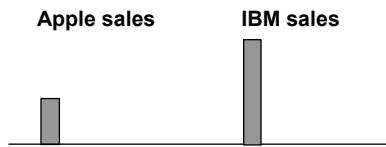


- Apple's next computer was the Macintosh
- It incorporated the best features of the Lisa but was sold at a substantially lower price.
- Also features not present in the Lisa were added to the Macintosh
- Compared to IBM-PC it was a speed vs. ease of use tradeoff

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The Attack Of The Clones

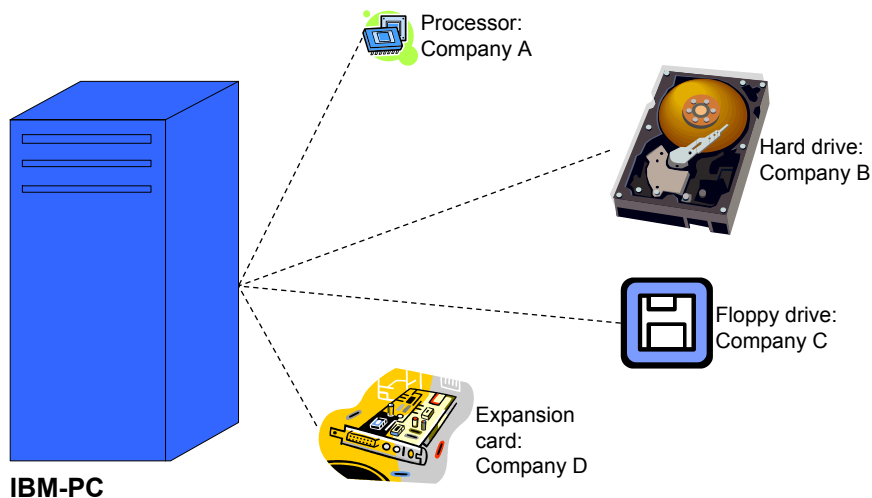
- Although it was a late entry into the microcomputer market IBM eventually dominated.



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The Attack Of The Clones (2)

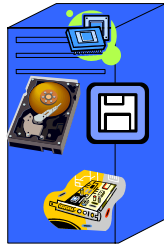
- Although the IBM-PC was marketed and sold under the IBM brand most of the parts were not manufactured in-house.



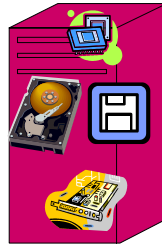
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The Attack Of The Clones (3)

- The parts manufacturers were free to sell their components to other companies.
- About the same time that the IBM-PC was sold, three ex-employees of Texas Instruments founded their own company: Compaq.
 - They conceived of producing their own copy of the IBM-PC under their own brand name.
 - It would run under MS-DOS and be 100% compatible with other software
 - The first IBM-PC clone was delivered by Compaq in 1983.



IBM-PC

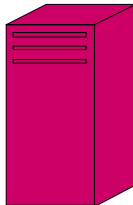


Compaq clone

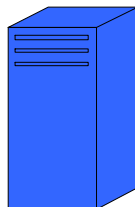
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The Attack Of The Clones (4)

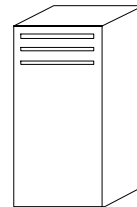
- This opened the flood gates for other computer manufacturers to produce their own clone computers.



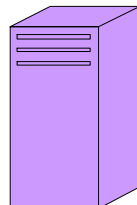
**Compaq
clone**



IBM-PC



**Mom and pop
shop clone**

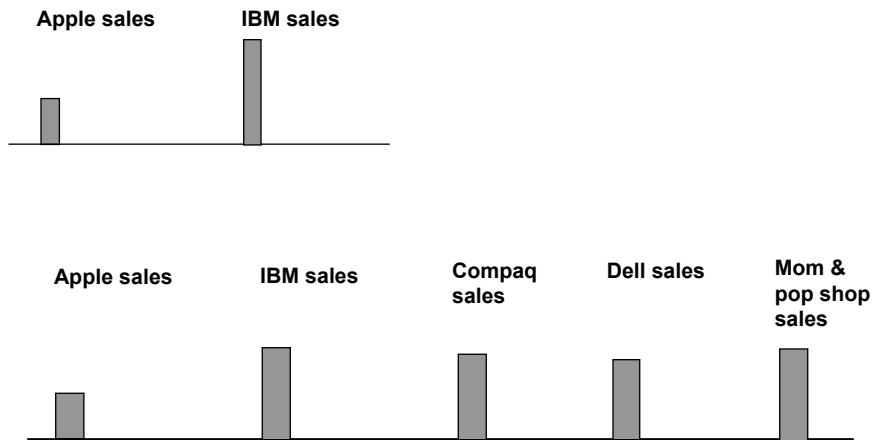


**Dell
clone**

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The Attack Of The Clones (5)

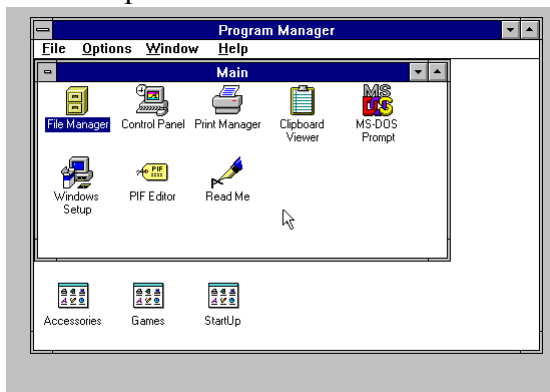
- The result was that IBM eventually lost control over the computer architecture that it invented.



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The Attack Of The Clones: The Rise Of Microsoft

- The loser of the clone war was IBM.
- The real winner of the clone war was Microsoft.
- By the 1990's Windows developed an interface for MS-DOS that incorporated some of the features of the MAC GUI.



Windows 3.1 © Microsoft

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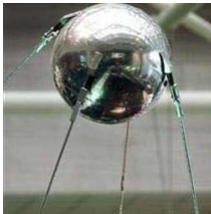
Intel Microprocessors

- Many of today's microcomputers are run by Intel microprocessors.
- Early processors were simply numbered e.g., 80286, 80386, 80486 etc.
- In a fashion similar to how the IBM-architecture was copied, other manufacturers produced their own version of the Intel processor.
- This practice ended when the Pentium line was released:
 - P5 architecture: first released in 1993 e.g., Pentium I
 - P6 architecture: first released in 1995 e.g., Pentium Pro, Pentium II, Pentium III
 - P7 architecture: first released in 2000 e.g., Pentium IV

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The Origins Of The Internet

- State of the US space program 1957: a sophisticated three stage rocket was planned as the first man-made vehicle to be sent into space.
- The USSR surprised the world by launching Sputnik I



- One of the reactions of the American government was the creation of the Advanced Research Projects Agency (ARPA) within the Ministry of Defense.

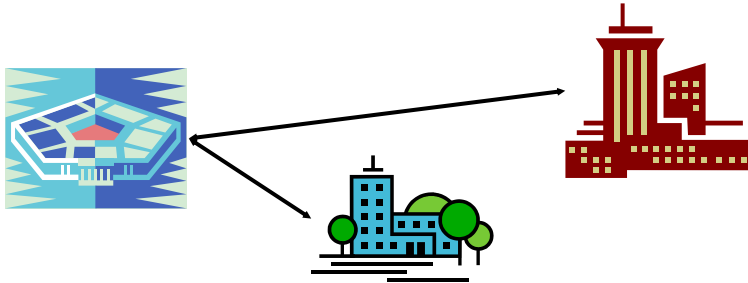
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The Origins Of The Internet (2)

- The main focus of ARPA was on national defense.



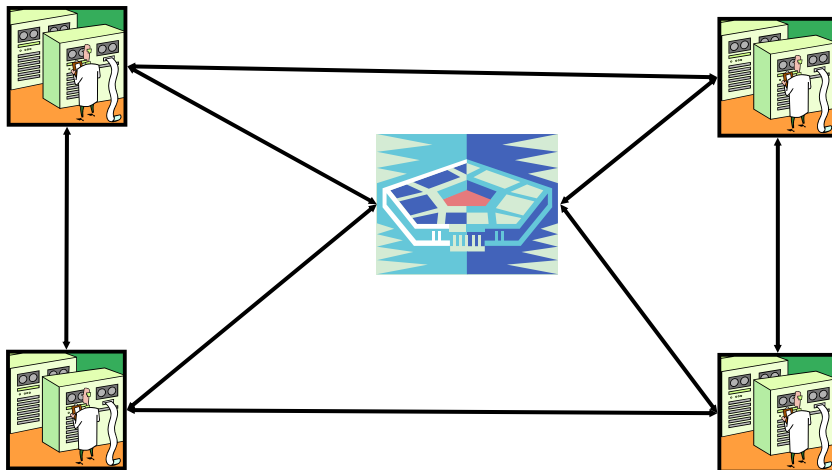
- But an important part of defense involved communications.



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The Origins Of The Internet (3)

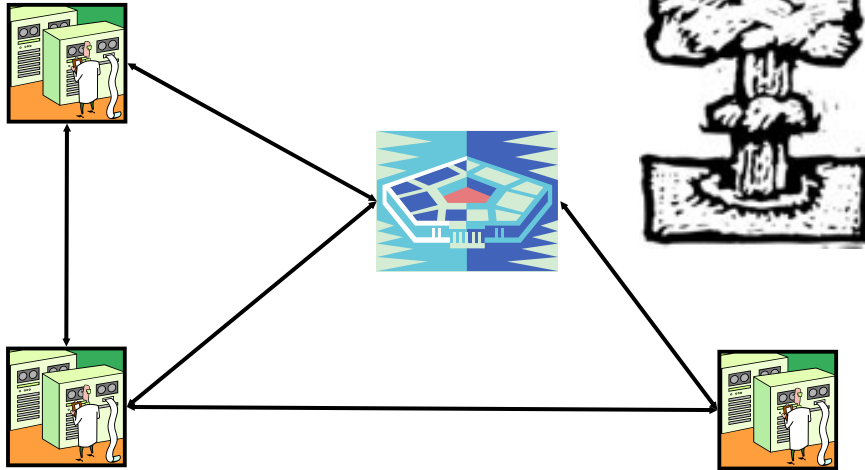
- Another motivator for research was to have computers functional in the advent of disaster



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The Origins Of The Internet (3)

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The Origins Of The Internet (4)

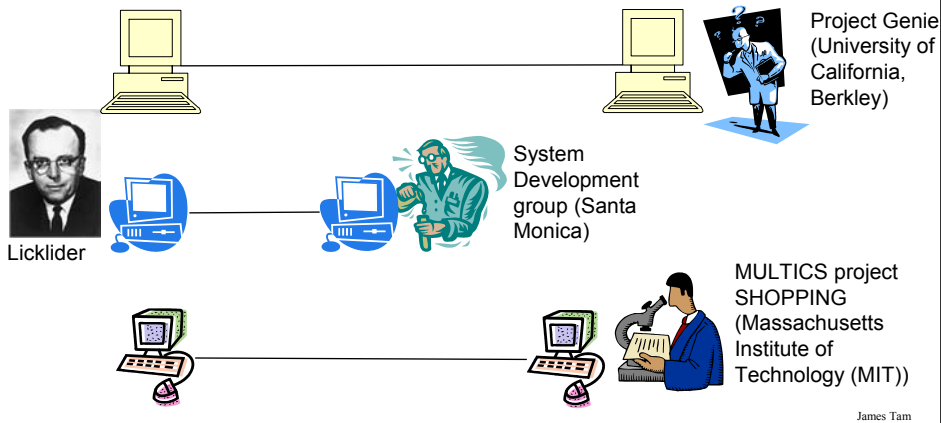
- Researchers working for ARPA needed computers to communicate and to share information



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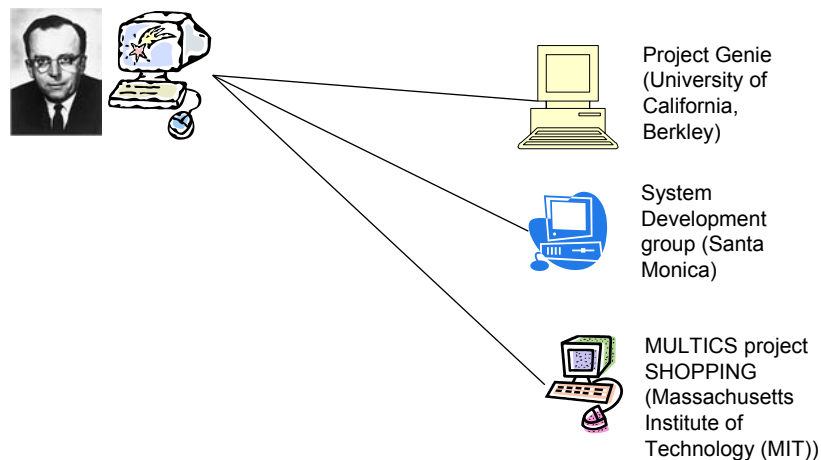
The Origins Of The Internet (5)

- Current approaches for connecting computers were unsatisfactory.
- J.C.R. Licklider headed the US Department of defense information processing office DARPA (Defense Advanced Research Projects Agency) - formerly ARPA.



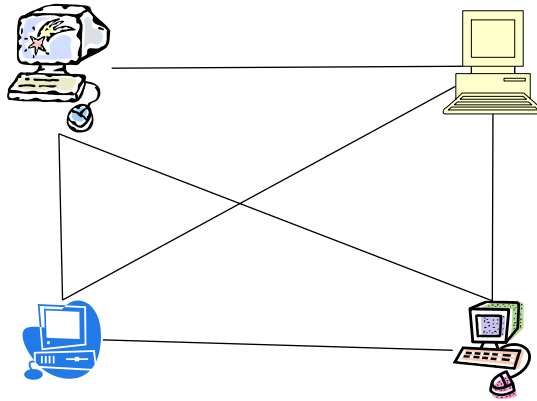
The Origins Of The Internet (6)

- Motivations driving the research at DARPA:
 1. Computers to be connected using a common language



The Origins Of The Internet (7)

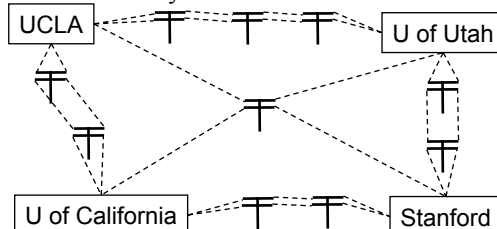
- Motivations driving the research at DARPA:
 2. Decentralized computing (usable in the advent of disaster)



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ARPANET

- The first computers were connected via ARPANET (Advanced Research Projects Agency Network).
- The initial ARPANET consisted of 2 host computers which were connected at the start of 1969 from the following locations:
 - UCLA
 - Stanford
- Later additional hosts were added to the network (end of 1969) from:
 - The University of California (Santa Barbara)
 - The University of Utah



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Important Milestones Of The ARPANET

- In 1972 the first "hot" application was introduced by Ray Tomlinson.
- 1985 the US National Science Foundation established NSFNET which now took over from ARPANET as the backbone of the network.
- However in the 1980's the main focus of the NSFNET was research.
 - NSFNET excluded "...purposes not in support of research and education."
- The private sector had to develop their own backbone:
 - 1987 the first Internet provider UUNET was founded.
 - But the Internet was still largely unused.
 - Main attractions for business: email, online discussion groups and chat facilities.
 - So although business could now access the Internet most of its growth still driven by governments and academia.

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Important Milestones Of The ARPANET (2)

- 1990:
 - The number of hosts climbed to 300,000
 - The ARPANET was shut down
 - The first Internet search engine: Archie was developed at McGill university
- 1991
 - The restriction of commercial access to the backbone computers of NSFNET was removed.
 - WWW (World Wide Web) was released to the public.

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The History Of The World Wide Web



- Designed in 1989 by Tim Berners-Lee and scientists in Geneva who were interested in making it easier to share research documents.
- Documents could be linked through a protocol called http (hyper text transfer protocol).
- Documents were made available for free browsing and downloading from the web (*substantially* easier than the alternative).
- 1990 the first web browser “WorldWideWeb” was written.
- 1993 Mark Andreessen of NCSA (National Center for Super Computing Applications) launched Mosaic X the first popular web browser.

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The History Of The World Wide Web (2)



- Prior to the advent of the web the Internet was largely used by a niche user group.
- The advent of the WWW drastically changed that.

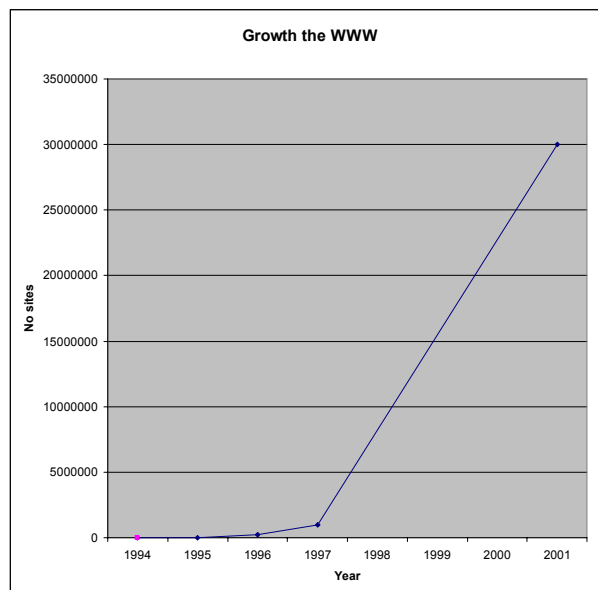
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Milestones Of The WWW

- 1994 there were over 3 million hosts and 3,000 web sites.
- 1995 there were over 6 million hosts and 25,000 web sites.
- 1996 there were over 12 million hosts and over 250,000 web sites.
- 1997 the number of hosts exceeded 19 million with over 1 million web sites.
- 2001 the number of hosts approximately 110 million and the number of web sites reaching 30 million.

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Milestones Of The WWW (2)



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You Should Now Know

- How the invention of the microprocessor revolutionized computing
- What was the first computer that was targeted specifically for the home user
- What was the influence of Microsoft on microcomputers
- The history of the IBM-PC
- The foundation of Apple Computers
- The history of some of Apple's early computers: Apple I, Apple II, Lisa, Macintosh
- How IBM lost control over a computer architecture that it developed through the rise of clone computers
- How the rise of clone computers lead to the market dominance of Microsoft in the microcomputer market

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You Should Now Know (2)

- The history of Intel microprocessors
- The history behind the origins of the Internet:
 - What was the initial motivation for developing the Internet and what factors later affected its development
 - What were the agencies behind its development
- The history of the ARPANET
- The history of the World Wide Web

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